

Amendments to the Drawings:

The drawing sheets attached in connection with the above-identified application containing Figures 1 and 2 are being presented as new formal drawing sheets to be substituted for the previously submitted drawing sheets. The drawing Figures 1 and 2 have been amended. Appended to this amendment is an annotated copy of the previous drawing sheets which have been marked to show changes presented in the replacement sheets of the drawings.

The specific changes which have been made to Figures 1 and 2 are to add "Prior Art" labels.

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 2, 4, 6, 9, and 10 have been canceled.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 3, 5, 7, and 8 are now pending in this application.

Objections to the Drawings

The drawings are objected to for containing informalities. In particular, the Office objects to the drawings for not showing the features of claims 4, 6, and 9. Claims 4, 6, and 9 have been canceled. The Office also objects to the drawings because Figures 1 and 2 should be include a “Prior Art” legend. Figures 1 and 2 have been amended to overcome this objection.

Withdrawal of the objections is respectfully requested.

Claim Objection

Claim 3 is objected to for containing informalities. Claim 3 has been amended to overcome this objection. Withdrawal of the objection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1, 3-7, and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,495,759 (hereafter “Yamamoto et al.”) in view of U.S. Patent No. 3,999,003 (hereafter “Chevrolet et al.”). This rejection is respectfully traversed.

Amended claim 1 recites a differential signal transmission cable being used in transmitting image signals of liquid crystal displays of mobile phones, comprising: four stranded cores, each comprising an inner conductor covered with an insulation; an outer conductor being spirally wrapped around four stranded cores in the opposite direction to a stranding direction of the cores; and a sheath provided around the outer conductor, where the diameter of the cable is 1.0 mm or less. Claims 3, 5, 7, and 8 depend from claim 1.

Appended to this response as Exhibit A is a drawing showing a non-limiting example of a cable that falls within the scope of claim 1. As shown in the drawing, a cable 30 can include four stranded cores A, B, C, D that each comprise inner conductors 31 covered with an insulation 32. The cores can be stranded about a filler 35 located at the center of the cable 30. Inner conductors 31 can themselves be stranded as well, as shown in the exemplary drawing. An outer conductor 33 is spirally wrapped around the stranded cores so that the outer conductor 33 is wrapped in a direction that is opposite to the strand direction of the four cores A, B, C, D, as shown in the exemplary drawing. A sheath 34 may also be formed around the outer conductor 33.

As discussed in the specification on page 6, lines 6-18, in a case where a wrapping direction is the same as a stranding direction of the cores, an outer conductor falls into the grooves formed by the stranded cores, thereby creating instability in the cable. However, providing an outer conductor that is wrapped in a direction that is opposite to the stranding direction of the cores advantageously avoids this problem and provides structural stability for the cable.

Yamamoto et al. discloses a two-core parallel coaxial cable 1 that includes two parallel cores 4a, 4b that have inner conductors 2a, 2b coated with insulations 3a, 3b. See Yamamoto et al. at col. 3, lines 37-50; Figure 2. Yamamoto et al. discloses that each of the inner conductors 2a, 2b can be a twisted wire conductor. See Yamamoto et al. at col. 3, lines 51-54. A transversely wound shield 5 is provided around the cores 4a, 4b and a metal deposition layer 7, which is formed on a surface of a plastic tape 6, and a composite tape 8 are formed around the shield 5. See Yamamoto et al. at col. 3, lines 41-50.

However, Yamamoto et al. does not disclose that the cores 4a, 4b are stranded, as noted by the Office on page 4 of the Office Action. Furthermore, Yamamoto et al. does not disclose or suggest “an outer conductor being spirally wrapped around four stranded cores in the opposite direction to a stranding direction of the cores,” as recited in amended claim 1, because Yamamoto et al. does not disclose or suggest that the shield 5 is spirally wrapped around cores 4a, 4b in a direction that is opposite to a stranding direction of the cores.

Chevrolet et al. discloses a signal transmission cable that includes wire 2 coated with an insulating sheath 19 and cellulose fibers to form a further coating 21. See Chevrolet et al. at col. 5, line 23, to col. 6, line 15; Figures 2, 3, and 5. However, Chevrolet et al. does not disclose or suggest “an outer conductor being spirally wrapped around four stranded cores in the opposite direction to a stranding direction of the cores.” Chevrolet et al. does not disclose an outer conductor, nor does Chevrolet et al. disclose or suggest an outer conductor that is spirally wrapped around wires 2 in an opposite direction to the stranding direction of the wires 2.

The Office asserts that because Yamamoto et al. discloses a shield 5 that is spirally wrapped around cores in a left hand lay direction and Chevrolet et al. discloses wires 2 that are stranded in a right hand lay direction it would have been obvious to combine the teachings of Yamamoto et al. and Chevrolet et al. to provide all of the features of claim 1. Applicant respectfully disagrees.

Although Yamamoto et al. discloses a shield 5 that is wrapped in a left hand direction and Chevrolet et al. discloses wires 2 that are stranded in a right hand direction, neither Yamamoto et al. or Chevrolet et al. disclose or suggest a cable that would include both features of four stranded cores and an outer conductor that is spirally wrapped around the cores in a direction that is opposite to the stranding direction of the cores.

Although Yamamoto et al. discloses a shield 5 that is wrapped in a left hand direction, Yamamoto et al. does not disclose or suggest that this shield 5 would be wrapped in a direction that is in an opposite direction to a stranding direction of cores. In fact, Yamamoto et al. discloses that cores 4a, 4b are parallel to one another, not twisted. Chevrolet et al.

discloses that wires 2 are stranded in a right hand direction but does not disclose an outer conductor, let alone an outer conductor that is wrapped in a direction that is in an opposite direction to a stranding direction of cores.

It would not have been obvious to one of ordinary skill in the art to combine the teachings of Yamamoto et al. and Chevrolet et al. to provide a cable with four stranded cores and an outer conductor that is spirally wrapped around the cores in a direction that is opposite to the stranding direction of the cores. Because neither Yamamoto et al. or Chevrolet et al. disclose or suggest the combination of stranded cores and an outer conductor that is wrapped in a direction that is opposite to the stranding direction of the cores, it would not have been obvious to combine these references to provide all of the features recited in claim 1.

Furthermore, Applicant respectfully submits that the cable provided by the combination of Yamamoto et al. and Chevrolet et al. would not be capable of performing the intended use of a cable “being used in transmitting image signals of liquid crystal displays of mobile phones,” as recited in claim 1. Flexibility of a cable is an important feature for a cable used in such an application because the cable will be wired via a small hinge with a hole diameter that is not more than 5 mm. Because the mobile phone display is frequently opened and closed through the hinge, cables wired in the hinge must have excellent bending and twisting properties. A cable with stranded cores and a wrapped outer conductor, as recited in claim 1, has excellent flexibility.

However, the twin-axial cable disclosed by Yamamoto et al., with two cores arranged in parallel, would have a lower bending property in the width direction than in the thickness direction of the twin-axial cable. Therefore, the cable produced by the combination of Yamamoto et al. and Chevrolet et al. would not be capable of adequately performing the intended use recited in claim 1 because it would have insufficient flexibility.

For at least the reasons discussed above, withdrawal of this rejection is respectfully requested.

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. in view of Chevrolet et al., as applied to claim 1, and further in view of U.S. Patent No.

3,433,884 (hereafter “Cogelia et al.”). This rejection is respectfully traversed. Claim 2 has been canceled. Furthermore, Cogelia et al. fails to remedy the deficiencies of Yamamoto et al. and Chevrolet et al. discussed above in regard to independent claim 1. Withdrawal of this rejection is respectfully requested.

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. in view of Chevrolet et al., as applied to claim 1, and further in view of Cogelia et al. and U.S. Patent No. 6,169,251 (hereafter “Grant et al.”). This rejection is respectfully traversed. Cogelia et al. and Grant et al. fail to remedy the deficiencies of Yamamoto et al. and Chevrolet et al. discussed above in regard to independent claim 1. Withdrawal of this rejection is respectfully requested.

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. in view of Chevrolet et al., as applied to claim 1, and further in view of U.S. Patent No. 5,521,333 (hereafter “Kobayashi et al.”). Claim 9 has been canceled. Furthermore, Kobayashi et al. fails to remedy the deficiencies of Yamamoto et al. and Chevrolet et al. discussed above in regard to independent claim 1, from which claim 9 depends. Withdrawal of this rejection is respectfully requested.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for

such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

By 

Date 6/4/07

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Exhibit A

